

**What is Claimed is:**

1        1. An apparatus for monitoring surface variations on a component, said  
2 apparatus comprising:

3                (a) a non-vibrating capacitance probe;  
4                (b) means for positioning said non-vibrating capacitance probe in  
5                proximity to the component; and  
6                (c) means for measuring the contact potential difference between the  
7                component and said non-vibrating capacitance probe.

1        2. An apparatus according to Claim 1, further comprising a means for  
2 measuring the relative motion between the component and said non-vibrating capacitance  
3 probe.

1        3. An apparatus according to Claim 2, further comprising means for  
2 regulating the relative motion between the component and said non-vibrating capacitance  
3 probe.

1        4. An apparatus according to Claim 1, further comprising means for  
2 measuring the spatial distance between the component and said non-vibrating capacitance  
3 probe.

1        5. An apparatus according to Claim 1, further comprising a means for  
2 supporting the component.

1        6. An apparatus according to Claim 5, wherein said means for positioning  
2 said non-vibrating capacitance probe in proximity to the component is fixed relative to  
3 said means for supporting the component.

1        7. An apparatus according to Claim 1, wherein said surface variation is  
2 surface wear.

251177-10733-215

1           8.       A process for monitoring surface variations on a component, comprising  
2 the following steps:

3           (a)      imparting relative motion between the component and a non-  
4                   vibrating capacitance probe;  
5           (b)      monitoring the relative motion between the component and  
6                   the non-vibrating capacitance probe; and  
7           (c)      monitoring the contact potential difference between the component  
8                   and the non-vibrating capacitance probe.

1           9.       A process according to Claim 8, further comprising the step of monitoring  
2 the distance between the said test surface and the non-vibrating capacitance probe.

1           10.      A process according to Claim 9, wherein the surface variation is surface  
2 wear.

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